Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Request by Globalstar, Inc. To Expand Its Ancillary Terrestrial Component ("ATC") Authority To Encompass Its Full Assigned Spectrum	IB Docket No. RM-11339

Comments of WiMAX Forum

The WiMAX Forum™ is the world's leading organization promoting global standardization for, and adoption of, metro-scale wireless broadband networks. As such, the organization shares the Commission's appreciation and acknowledgement that wireless broadband networks are an effective and rapid means to provide high data rate connectivity to communities and organizations across the U.S. to meet the growing needs of both the consumer markets and the needs of public safety. Along these lines, the WiMAX Forum works closely with service providers and regulators to ensure that WiMAX Forum Certified systems meet customer and government requirements. The WiMAX Forum respectfully submits these comments in response to the request by Globalstar to expand its ancillary terrestrial component ("ATC").[1]

---

[1] *Globalstar Petition For Expedited Rulemaking For Authorization To Provide Anceillary Terrestrial Component Services In Its Entire Spectrum Allocation*, ("Globalstar Application") 20 June 2006, IB Docket No. RM-11339.

On June 20, 2006 Globalstar petitioned the Commission for an expedited rulemaking to expand its current ATC proposal; in particular Globalstar requests that their ATC deployment be allowed to utilize the 2496-2500 MHz band. The WiMAX Forum has interest in this proceeding due to the negative aspects that the proposal from Globalstar would have on the ability of licensees in this band to deploy wireless broadband equipment in the 2.5 GHz bands. The WiMAX Forum is concerned primarily with the impact of co-frequency and co-coverage operations with any Part 27 licensee. The WiMAX Forum urges the Commission to reject the proposal to use any of the 2496-2500 MHz band due to interference concerns--it is not possible for the Globalstar ATC system to be deployed on a co-frequency and co-geographic basis with out causing harmful interference to Part 27 deployments using the same channels.

The rational for Globalstar to request the use of the 2496-2500 MHz band is predicated on the Commission's decision to allow MSS operations on a co-frequency / co-coverage basis to Part 27 operations.[2] This decision appears to be based only upon factors associated with the satellite component of the MSS operations which does not extend to the ATC component that Globalstar seeks authority for operation. The Commission decided that the key technical factor in determining compatibly with Part 27 operations was the ability of the MSS Satellite down links to comply with PFD levels in the

---

2 *Id.* p. 26.

bands used by Part 27 operators.[3] With respect to the level for protecting theses systems, the WiMAX Forum supports the proposals by the Society of Broadcast Engineers ("SBE") and BellSouth Corp. ("BellSouth") for changes to the rules that will allow BRS channel 1 licensees to deploy broadband services in 2496-2500 MHz.[4] The Commission's decision to restrict Mobile Satellite Service ("MSS") operations in the 2496-2500 MHz band to the power flux density ("PFD") limits that were initially established by the International Telecommunications Union ("ITU") as coordination thresholds for the 2.5 GHz band is nonsensical given the United States' recent recognition that these PFD limits are not protective of terrestrial operations in the 2.5 GHz band.[5]

The attached annex illustrates the problem of an ATC base station being deployed with the characteristics proposed by Globalstar, As shown the power flux density on the ground is 77 dB to over 102 dB above that which would be experienced from the Satellite component of the Globalstar system

---

[3] *Order on Reconsideration and Fifth Memorandum Opinion and Order, Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz bands*; *Amendment of Part 2 of the Commissions Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, IB Docket No. 02-364, ET Docket No. 00-258, FCC 06-46, ¶31.

[4] *See* Petition of Society of Broadcast Engineers for Reconsideration, WT Docket No. 03-66 (filed May 22, 2006)["SBE Petition"]; Petition of BellSouth, *et al* for Partial Reconsideration, WT Docket No. 03-66, at 6-10 (filed July 19, 2006). *See also* WiMAX Forum Comments on Petitions for Reconsideration, WT Docket No. 03-66 (filed Aug. 18, 2006).

[5] *See* BellSouth Petition at 6-10.

complying with the limit in the US ITU proposal.[6] Therefore the WiMAX Forum does not agree with the Globalstar claims that its ATC services would not cause interference to other licensees operating in the same or adjacent spectrum.[7] In fact with the very high levels illustrated in the annex the WiMAX Forum believes that Part 27 licensees will experience significant harmful interference from any ATC base station operations in 2496-2500 MHz.

In conclusion, the WiMAX Forum is opposed to any use of the 2496-2500 MHz bands for MSS ATC operations as proposed by Globalstar. Such use will cause harmful interference to Part 27 operations and will be a detriment to those licensees ability to provide wireless broadband systems to the US public.

Respectfully submitted,
WiMAX Forum

/s/ Tim Hewitt

August 25, 2006

Tim Hewitt
Chair, WiMAX Forum Regulatory Working Group
WiMAX Forum
2495 Leghorn Street
Mountain View, CA 94043

6 The PFD from the Globalstar ATC base station fails to comply with the 25.208(v) limits by 68 dB to 92 dB.

7 Globalstar Application at p.21.

The WiMAX Forum™ is an organization of more than 375 operators, communications component and equipment companies. The WiMAX Forum's charter is to promote and certify the compatibility and interoperability of broadband wireless access equipment that conforms to the Institute for Electrical and Electronics Engineers (IEEE) 802.16 and ETSI HiperMAN standards. The WiMAX Forum was established to help remove barriers to wide-scale adoption of Broadband Wireless Access (BWA) technology, since a standard alone is not enough to incite mass adoption of a technology.

Annex: Globalstar ATC Base Stations Will Not Comply With The Commission's Power Flux Density Limits Found In Part 25.208

The Commission's decision to permit co-frequency / co-coverage operation between MSS and BRS operations in 2496-2500 MHz is based on the ability of the MSS system complying with power flux density limits found in the Commission's rules at section 25.208, the intent of this analysis is to show that the ATC base station that may be deployed in the 2496-2500 MHz band will not be able to comply with the power flux density levels prescribed by the Commission. Below are the power flux density rules and the ATC base station power levels currently in the Commission's rules.

§ 25.208 Power flux density limits

*****

(v) In the band 2496-2500 MHz, the power flux-density at the Earth's surface produced by emissions from non-geostationary space stations for all conditions and all methods of modulation shall not exceed the following values:

(1) -144 dB (W/m^2) in 4 kHz for all angles of arrival between 0 and 5 degrees above the horizontal plane;

-144 dB (W/m^2) + 0.65(δ -5) in 4 kHz for all angles of arrival between 5 and 25 degrees above the horizontal plane; and

-131 dB (W/m^2) in 4 kHz and for all angles of arrival between 25 and 90 degrees above the horizontal plane.

(2) -126 dB (W/m^2) in 1 MHz for all angles of arrival between 0 and 5 degrees above the horizontal plane;

-126 dB (W/m^2) + 0.65(δ -5) in 1 MHz for all angles of arrival between 5 and 25 degrees above the horizontal plane; and

-113 dB (W/m^2) in 1 MHz and for all angles of arrival between 25 and 90 degrees above the horizontal plane.

These values are obtained under assumed free-space propagation conditions.

§ 25.254 Special requirements for ancillary terrestrial components operating in the 1610–1626.5 MHz/2483.5–2500 MHz bands.

(a) An applicant for an ancillary terrestrial component in these bands must demonstrate that ATC base stations shall:

(1) Not exceed a peak EIRP of 32 dBW in 1.25 MHz;

The deployment of the Globalstar ATC base stations will be in both the rural and urban environments using equipment very similar to those currently being deployed by terrestrial cellular and PCS systems.[8] Based on the statement that the deployment will be very similar to terrestrial cellular and PCS systems it can be reasoned that a typical base station appears to have an antenna height of 30 m with a 2.5 degree down tilt and an antenna gain of 17 dBi.[9] An example of this type of antenna is the Andrew UMW-06516-2DH which has a gain of 18.1 dBi and a 2 degree downtilt.[10] The characteristics are found in Table 1 and a representative graph of the elevation pattern is found in Figure 1.

---

8 Application File No. SAT-MOD-2005-0301-00054 ("GLLC ATC Application"), Exhibit B-3, p.1.

9 This is representative of mobile systems as defined in ITU-R Report M.2039 – "Characteristics of terrestrial IMT-2000 systems for frequency sharing / interference analysis".

10 http://www.andrew.com/products/antennas/bsa/UMW-06516-2DH.aspx.

Table 1: Characteristics of UMW-06516-2DH.

Frequency (MHz)	1710 - 1880	1850 - 1990	1920 - 2170
Gain dBd/dBi	15.3/17.4	15.8/17.9	16/18.1
Horizontal BW	65°	65°	65°
Vertical BW	7°	6.5°	6°
Polarization	Vertical	Vertical	Vertical
Vertical Beam Tilt	2°	2°	2°
VSWR	<1.4:1	<1.4:1	<1.4:1
USLS	22	20	17
Front-To-Back Ratio	28	26	26

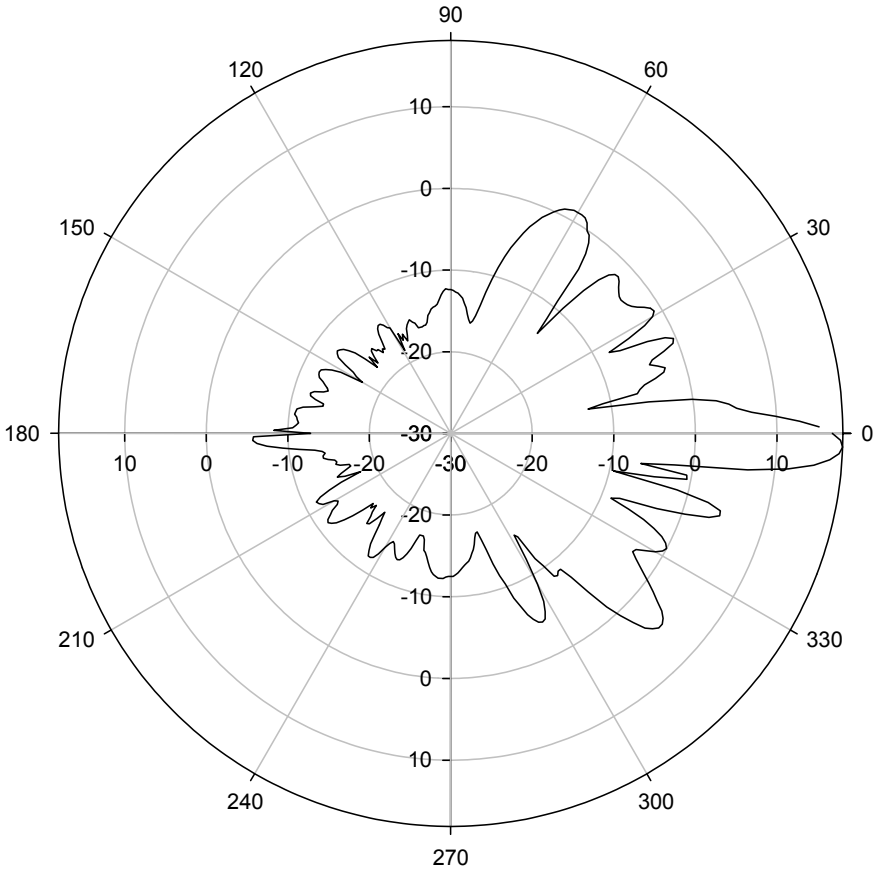

Figure 1: Antenna pattern for UMW-06156-2DH, Gain is in dBi.

Using the above information one can compute the PFD on the ground surrounding the ATC base station using the antenna and transmitter

characteristics with the assumption that there is no surrounding terrain variations. The PFD on the ground can be found by applying the spreading factor of $1/(4\pi R^2)$, where R is the distance from the Globalstar MSS ATC base transmitter to a point on the ground. Shown in Figure 2 is the associated PFD from the Globalstar MSS ATC base transmitter, as illustrated the base station fails to comply with the PFD levels of section 24.208(v) by 68 dB to over 92 dB and fails to comply with the PFD levels in the US ITU proposal by 77 dB to 102 dB.

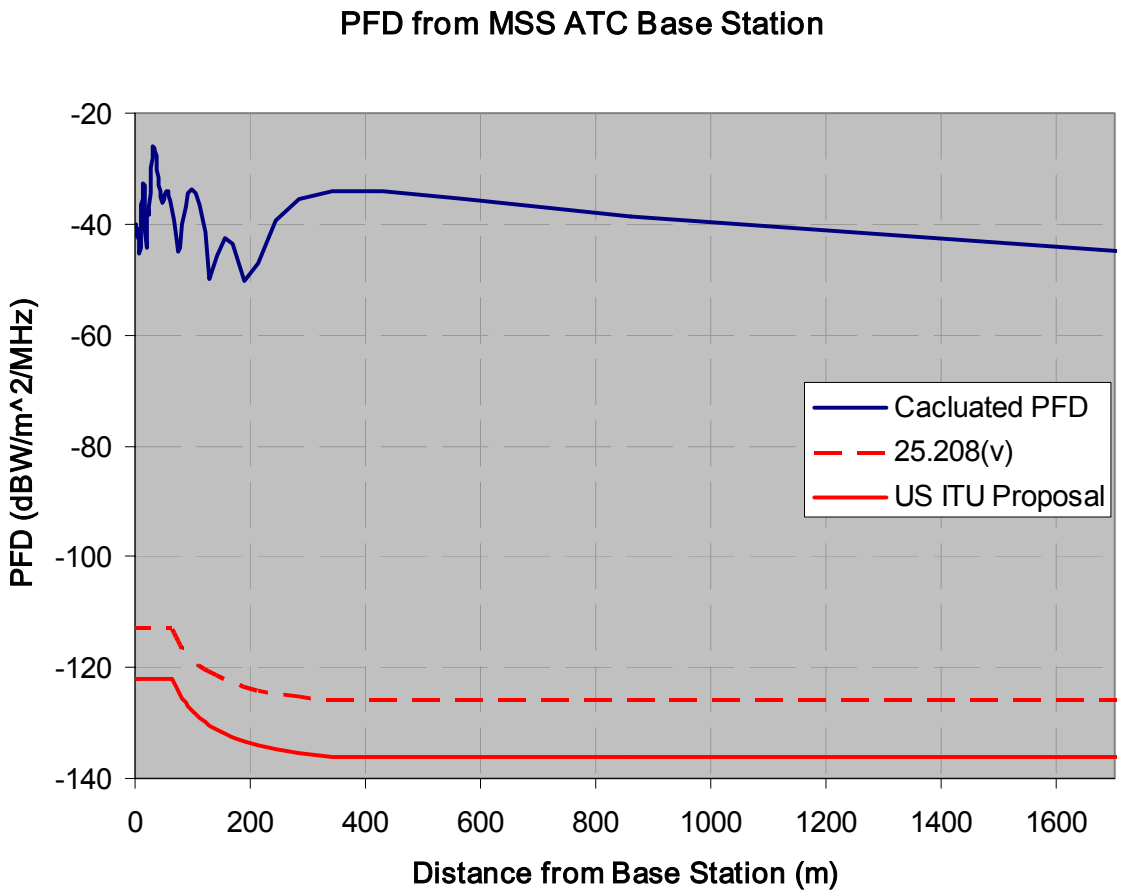

Figure 2: PFD from Globalstar MSS ATC Base Station, the zero point is directly below the MSS ATC base station.

CERTIFICATE OF SERVICE

I, Rob Kubik, do hereby certify that on this 28th day of August 2006, I caused copies of the foregoing "Comments of WiMAX Forum" to be delivered to the following via First Class U.S. mail:

William F. Adler
Vice President – Legal & Regulatory Affairs
Globalstar, Inc.
461 S. Milpitas Blvd.
Milpitas, CA 95035

William T. Lake
Josh L. Roland
Nathan Mitchler
Wilmer Cutler Pickering Hale and Dorr LLP
1875 Pennsylvania Avd., NW
Washington, D.C. 20006

/s/ Rob Kubik